



Split16 ver. 4 multi-video electronic system

Multiple standard

Automatic selection of the video standard (Pal/Secam/Ntsc, interlaced/not interlaced)

Modular

One Split16 handles videowalls of size 2x2 to 4x4.
Multiple Split16 can manage up to 64x64 displays videowall.

Fast

The Split16 contains 8 programs which enable the user to set up a videowall with a configuration that can vary from a 2x2 to a 4x4 simply by connecting the cables and activating the dip-switches.

Programmable

By using a PC and our software it is possible to create a personalized program for any possible videowall size.

Front Control

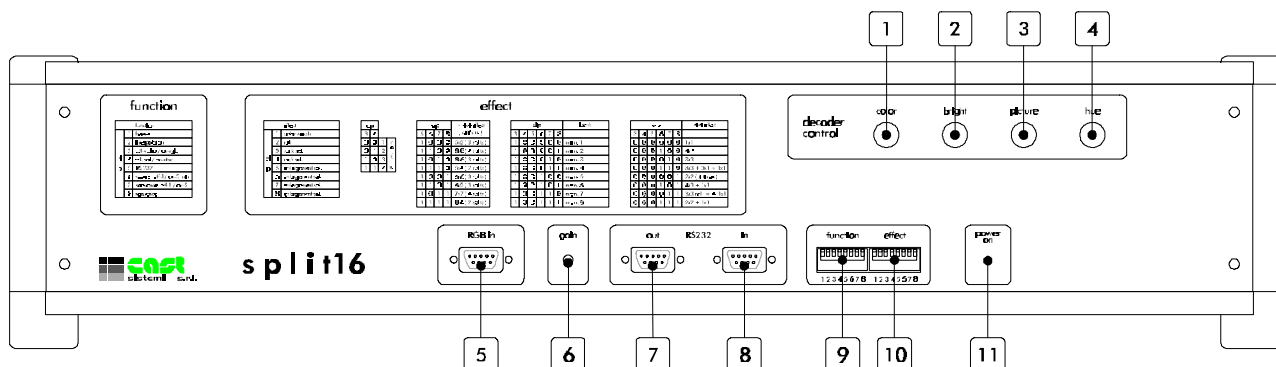
By placing a computer with our software in front of the videowall it is possible to act upon the various controls which are usually done from behind.

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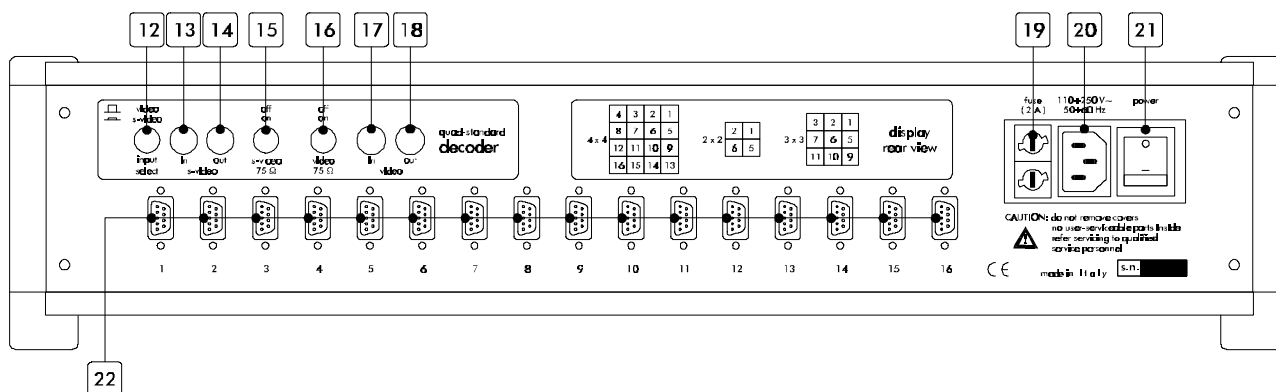
1 Controls and connectors location and function description

1.1 Front Panel



- [1] Colour
- [2] Brightness
- [3] Contrast
- [4] Hue (**optional**)
- [5] RGBs input of the external video signal
- [6] General intensity (minitrim. Increasing clockwise)
- [7] RS232 Serial output port (**not in Split16/4x4**)
- [8] RS232 Serial input port
- [9] “Functions” Dip switch
- [10] “Effects” Dip switch
- [11] L.E.D. power on/off

1.2 Back Panel



- [12] Input signal selection(Video/S-Video)
- [13] Input S-Video (connector type MiniDin)
- [14] Output S-Video (connector type MiniDin)
- [15] 75 Ohm termination of S-Video input (75 ohm)
- [16] 75 Ohm termination of Video input (75 ohm)
- [17] Input Video signal (connector type BNC)
- [18] Output Video Signal (connector type BNC)
- [19] Fuses (2 amp.)
- [20] Power input 110V-240V 50-60Hz (connector type VDE)
- [21] On/off switch
- [22] RGBs output of the video signal (connector type DB9pin female)

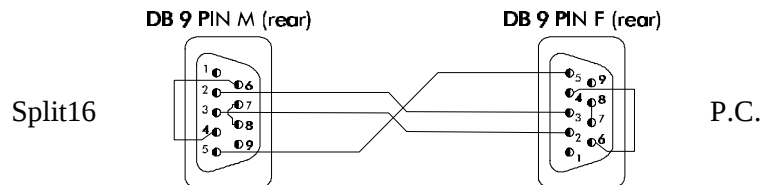
2 Cabling and set up

Turn on all apparatus only after completing all the cable connections.

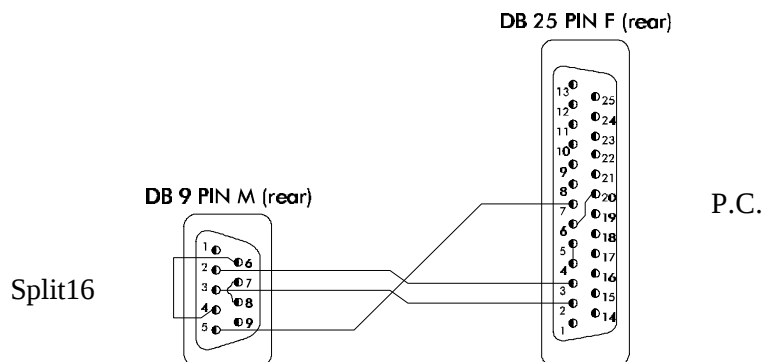
- 1) Connect the video cable RG59/BNC to the connector VIDEO IN BNC [17] of the quad-standard decoder of the Split16.
The switch 75 ohm [16] has to always be on the “on” position.
The selector Pal / S-Video has to always be in the right position.
- 2) Connect (with the 16 RGB cables) the Split16 [22] to the displays.
The cables have two DB9 pin male, marked “S” and “M”. “S” goes to Split16 and “M” to the display (monitors or rearprojectors).
The screws of the DB9 never have to be tight very strongly because the support towers could unscrew when disconnecting the connector.
- 3) Power on the the displays and only then to the rest of the system.

3 Cabling pin outs

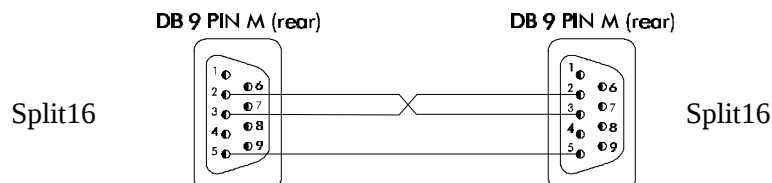
3.1 RS232 Serial port cable (from Split16 to a P.C. with DB9pin)



3.2 RS232 Serial port cable (from Split16 to a P.C. whit DB25pin)

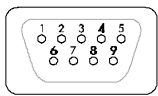


3.3 RS232 Serial port cable (from Split16 to Split16 “bridge” whit DB9pin)



4 Input/Output Connectors

4.1 RGBs In external [5]

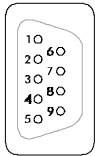


DB 9 PIN M (front)

- | | |
|-----------|---------|
| 1. R | 6. N.C. |
| 2. G | 7. N.C. |
| 3. B | 8. N.C. |
| 4. GND | 9. N.C. |
| 5. C-SYNC | |

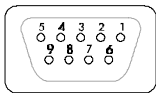
4.2 RGB Out [22]

DB 9 PIN F (front)



- | | |
|-----------|---------|
| 1. R | 6. N.C. |
| 2. G | 7. N.C. |
| 3. B | 8. N.C. |
| 4. C-SYNC | 9. N.C. |
| 5. GND | |

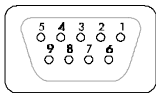
4.3 Serial In [8]



DB 9 PIN F (front)

- | | |
|------------|---------|
| 1. N.C. | 6. N.C. |
| 2. RX data | 7. N.C. |
| 3. TX data | 8. N.C. |
| 4. N.C. | 9. N.C. |
| 5. GND | |

4.4 Serial Out [7] (not in Split16/4x4)

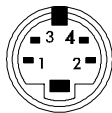


DB 9 PIN F (front)

- | | |
|------------|---------|
| 1. N.C. | 6. N.C. |
| 2. RX data | 7. N.C. |
| 3. TX data | 8. N.C. |
| 4. N.C. | 9. N.C. |
| 5. GND | |

4.5 S-video In [13] Out [14]

MINI-DIN 4 PIN



- | |
|----------------------|
| 1. GND |
| 2. GND |
| 3. CHROMINANCE (C) |
| 4. LUMINANCE (Y) |

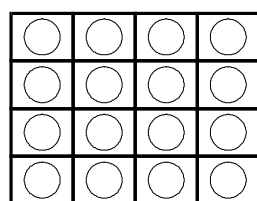
5 Dip switch of the effects [10]

dip switch	effects
1	color wash
2	roll
3	selection rack number and memory bank
4	rack number selection
5	magnifications greater than 4x4
6	magnifications and memory bank
7	magnifications and memory bank
8	magnifications and memory bank

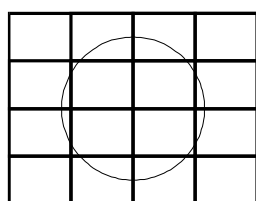
5.1 Dip switch combinations for the selection of magnifications up to 4x4

dip switch effects						
3	4	5	6	7	8	
0	0	0	0	0	0	① 1x1
0	0	0	1	0	0	② 4x4
0	0	0	0	1	0	③ 3x3 (color wash)
0	0	0	1	1	0	④ 3x3 + 1x3 + 1x1
0	0	0	0	0	1	⑤ 2x2 (4 times)
0	0	0	1	0	1	⑥ 4x3 + 1x1
0	0	0	0	1	1	⑦ 3x3 roll + 1x1
0	0	0	1	1	1	⑧ 2x2 central + 1x1

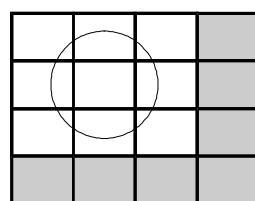
5.1.1 Obtainable configurations via dip.switch up to 4x4 with one Split16 (without P.C.)



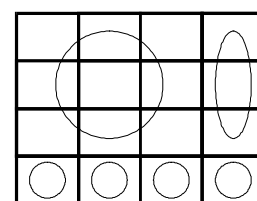
1x1
①



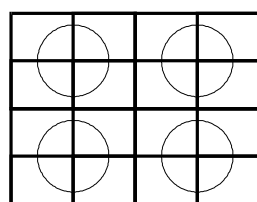
4x4
②



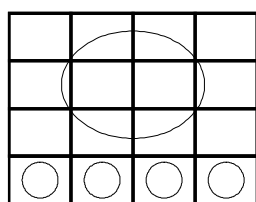
3x3 (color wash)
③



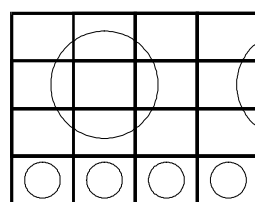
3x3 + 1x3 + 1x1
④



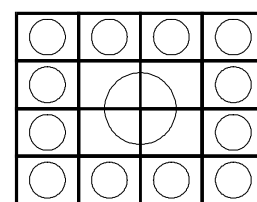
2x2 (4 times)
⑤



4x3 + 1x1
⑥



3x3 roll + 1x1
⑦



2x2 central + 1x1
⑧

5.2 Dip switch combinations for the selection of magnifications above 4x4

dip switch effects						magnification (n. of Split16)
3	4	5	6	7	8	
*	*	1	0	0	0	5x5 (3 Splitters)
*	*	1	1	0	0	8x8 (4 Splitters)
*	*	1	0	1	0	8x6 (3 Splitters)
*	*	1	1	1	0	5x4 (2 Splitters)
*	*	1	0	0	1	6x6 (3 Splitters)
*	*	1	1	0	1	6x5 (3 Splitters)
*	*	1	0	1	1	7x7 (4 Splitters)
*	*	1	1	1	1	8x8 in 8x4 (2 Sp16)

5.3 * Dip switch combinations for the selection of the rack number

dip switch effects		
3	4	rack sel.
0	0	rack n. 1
0	1	rack n. 2
1	0	rack n. 3
1	1	rack n. 4

5.4 Dip switch combinations for the selection of the internal programmable memory banks

dip switch effects						
3	4	5	6	7	8	
1	0	0	0	0	0	mem. 1 bank
1	0	0	1	0	0	mem. 2 bank
1	0	0	0	1	0	mem. 3 bank
1	0	0	1	1	0	mem. 4 bank
1	0	0	0	0	1	mem. 5 bank
1	0	0	1	0	1	mem. 6 bank
1	0	0	0	1	1	mem. 7 bank
1	0	0	1	1	1	mem. 8 bank

5.4.1 Memorization of new enlargements in the banks of internal programmable memory

- 1) Turn on the RS232 [8], setting to on the dip switch n.5 of the functions [9].
- 2) Run from Windows the software Videowall Manager Split16 bundled with the device.
- 3) Follow the instructions of the software.

6 Functions dip switch [9]

dip switch	functions
1	freeze (not active in the enlargements which contain 1x1)
2	interpolation
3	input selection: CVBS (off) / RGBs (on)
4	(*) internal memory bank sequence (setting dip 8 ON)
5	control selection: via dip switch (off) / via RS232 (on)
6	speed of the sequence: 1min. (off) / 5 min. (on)
7	selection of the sequence: 4x4 (off) / 3x3 (on)
8	sequence: on / off

7 Sequence

7.1 Functions dip switch combinations [9] for the selection of the sequence

dip switch functions			
6	7	8	sequences
x	x	0	Sequence not active
0	0	1	Sequence 4x4 fast(1 min.)
0	1	1	Sequence 3x3 fast (1 min.)
1	0	1	Sequence 4x4 slow (5 min.)
1	1	1	Sequence 3x3 slow (5 min.)

7.2 List of the sequences

7.2.1 Sequence 4x4

1x1
2x2 centered
4x3
3x3 color wash
2x2 4 times
3x3 roll + 4 1x1
4x4
3x3 + 1x3 + 1x1

7.2.2 Sequence 3x3

1x1
2x2 centred
3x3

NB: During the execution of the sequences the following selections remain active, it is then possible to vary them without interrupting the sequence:

Interpolation
Freeze
Roll
Input video (video comp./RGBs)
RS232
Color Wash

The RS232 (on/off) can be very useful because it has the effect to exclude the functions of all the other dip switches, so it is possible to use it as a lock to preserve the current setting (locking panel).

8 Cabling of screens bigger than 4x4 (frontal view)

8.1 5x5 Screen

1°- 1	1°- 2	1°- 3	2°- 1	2°- 2
1°- 5	1°- 6	1°- 7	2°- 5	2°- 6
1°- 9	1°- 10	1°- 11	2°- 9	2°- 10
1°- 13	1°- 14	1°- 15	2°- 13	2°- 14
3°- 1	3°- 2	3°- 3	3°- 5	3°- 6

8.2 6x6 Screen

1°- 1	1°- 2	1°- 3	1°- 4	2°- 1	2°- 2
1°- 5	1°- 6	1°- 7	1°- 8	2°- 5	2°- 6
1°- 9	1°- 10	1°- 11	1°- 12	2°- 9	2°- 10
1°- 13	1°- 14	1°- 15	1°- 16	2°- 13	2°- 14
3°- 1	3°- 2	3°- 3	3°- 4	3°- 5	3°- 6
3°- 9	3°- 10	3°- 11	3°- 12	3°- 13	3°- 14

8.3 7x7 Screen

1°- 1	1°- 2	1°- 3	1°- 4	2°- 1	2°- 2	2°- 3
1°- 5	1°- 6	1°- 7	1°- 8	2°- 5	2°- 6	2°- 7
1°- 9	1°- 10	1°- 11	1°- 12	2°- 9	2°- 10	2°- 11
1°- 13	1°- 14	1°- 15	1°- 16	2°- 13	2°- 14	2°- 15
3°- 1	3°- 2	3°- 3	3°- 4	4°- 1	4°- 2	4°- 3
3°- 5	3°- 6	3°- 7	3°- 8	4°- 5	4°- 6	4°- 7
3°- 9	3°- 10	3°- 11	3°- 12	4°- 9	4°- 10	4°- 11

NB: 1°, 2°, 3°, 4° = n° of Rack

1, 2, 3,.... 16 = n. of rgb/output [22] to connect to the displays

8.4 Some obtainable configurations with one or more Split16 (Horizontal x vertical)

With one Split16 **1x1h.res.** / **2x2h.res.** / 2x2centred / 2x3 / 3x2 / **3x3**+various frames / 3x4 / 4x3 / **4x4**
 With two Split16 3x3h.res / 4x4h.res / 4x5 / 5x4 / 4x6 / 6x4 / 4x7 / 7x4 / 4x8 / 8x4
 With three Split16 **5x5** / 6x5 / 7x5 / 8x5 / **6x6** / 7x6 / 8x6 / 4x9 / 9x4 / 4x10 / 10x4 / 4x11 / 11x4 / 4x12 / 12x4
 With four Split16 **7x7** / 7x8 / 8x7 / **8x8** (...and so on up to **64x64** with more Split16).

9 Setting 3x3 and 4x4 HiRes (with two Split16)

How to set HiRes 3x3 and 4x4 (1024x768) using two Split16 without P.C.

Dip Switch Effects

pin	1	2	3	4	5	6	7	8
	xx	xx	on	off	on	on	on	on

Upper **4x4** Hres. (First 8 output/rgb Split16 N.1)

pin	1	2	3	4	5	6	7	8
	xx	xx	on	on	on	on	on	on

Lower **4x4** Hres. (First 8 rgb/output Split16 N.2)

Dip Switch Effects

pin	1	2	3	4	5	6	7	8
	xx	xx	on	off	on	on	on	off

Upper **3x3** Hres. (Rgb_output n.1/2/3/5/6/7 of Split16 N.1)

pin	1	2	3	4	5	6	7	8
	xx	xx	on	on	on	on	on	off

Lower **3x3** Hres. (Rgb_output n. 1/2/3 of Split16 N.2)

10 Circular videowalls with the Roll function

With a single Split16 It is possible to drive a 9x3 / 9x4 circular videowall, made with *tower* displays available from Hantarex. This kind of installation can be reduced to 8x4 / 8x4 to allow an access to the center of the circular wall (with 9 displays the circle is completely closed, and the center inaccessible).

The Roll function of the Split16 was especially designed for this kind of configurations, allowing the image to slide from right to the left, thus rotating across the circle and showing the complete image in all of the viewing directions.

No external controller is needed to use this function, since it can be switched on by using the functions dip switch.

!!! Note that the roll function won't work on high resolution formats !!!

11 Technical characteristics

11.1 Analog Front-End

Absolute maximum resolution:	1024 horizontal points x 768 lines
Maximum resolution PAL:	1024 horizontal points x 576 lines
Maximum resolution NTSC:	1024 horizontal points x 488 lines
Analog bandwidth:	~10 MHz
Sampling frequency:	~20 MHz
Internal sampled data format:	linear 24 bit RGB (8:8:8)
Internal colour data format:	linear 16 bit RGB (5:6:5)
Pixel clock jitter from line to line:	< 4 ns
Pixel clock jitter between two cycles:	< 500 ps
Power consumption:	about 30 W
Weight	about 3 Kg.
Dimensions	559 x 128 x 300 mm. (l./a./p.)

Automatic recognition of the input signal's format (interlaced or non interlaced) ex. Photo-CD, CD-I, VideoCD.

11.2 Available effects without additional hardware

- 1x1 HI-Res (1024 Pt.)
- 2x2 HI-Res (1024 Pt.)
- 3x3 HI-Res (1024 Pt.) (2 Split16)
- 4x4 HI-Res (1024 Pt.) (2 Split16)
- 2x2 + frame of 1x1
- 3x3 3x3 repeated horizontally + 4 1x1
- 3x3 + 3x1 + 4 1x1
- 3x3 + frames of colours
- 4x4
- 4x3 + 4 1x1
- 5x4 (2 Split16)
- 5x5 (3 Split16)
- 6x5 (3 Split16)
- 6x6 (3 Split16)
- 7x7 (4 Split16)
- 8x6 (3 Split16)
- 8x8 (4 Split16)
- 8x8 in 8x4 format (2 Split16)
- 8 additional effects which can be recorded in non volatile memory and programmable from PC
- Freeze on all the effects except those containing 1x1
- Roll (rotation of the screen) on all the effects except those in 2x2 HI-Res
- Interpolation
- 2 sequences of effects (of 4x4 and 3x3)
- automatic sequencer with two speeds (1 and 5 min.)

11.3 Characteristics of the system controlled by PC

- Individual horizontal positioning of the outputs
- Vertical positioning in groups of four outputs (line multiplex)
- Continuous and individual horizontal amplitude regulation for all the outputs
- Continuous vertical amplitude regulation in four output blocks (line multiplex)
- Automatic system configuration (device address for multiple devices connected to RS232 in not needed)

NB: The maximum horizontal resolution is available **only** with the effects 1x1 and 2x2 (repeated 4 times), or with 3x3 HI-Res and 4x4 HI-Res, for which two Split16 are needed.